BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANPURA DIVISION

Name of Work: Package 3, includes 3 works of 100.00 Lakhs

1. Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.
2. Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.
3. Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.

FIRST & PART BILL

TEST REPORTS

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

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TEJUS

No. TC / BBMP / BYT-PMC / 596 / 20-21 Date:

To
The Executive Engineer
Byatarayanapura Division,
Bruhat Bangalore Mahanagara Palike,
Bangalore.

Dear Sir

Sub: Package 3, includes 3 works of 100.00 Lakhs

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **First RA bill** submitted by **M/S Benaka Developers and Projects Pvt.Ltd**, towards the above said work and arrived at an amount of **Rs. 54,86,636.00/-(Rupees Fifty Four Lakh Eighty Six Thousand Six Hundred and Thirty Six Only**). The work has been completed satisfactorily.

This is for your kind information.

Thank you and assuring you the best of our Services at all the times

TEJUS CONSULTANTS

For Tejus Consultants
(Nischal M)

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BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANPURA DIVISION

Name of Work: Package 3, includes 3 works of 100.00 Lakhs

1. Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.

FIRST & PART BILL

TEST REPORTS

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	Bruhat Bengaluru Mahanagara Palike		
Consultant	TEJUS CONSULTANTS,		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	WMM	**Date of Sampling**	13.01.2021
Sample Locati	Ashwathnagar c/s road	**Date of Testing**	14-01-2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	367.00	369.00	351.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	269.00	270.00	255.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	98.00	99.00	96.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	26.70	26.83	27.35	
5	Average Aggregate impact value	(%)	26.96			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	Ashwathnagar c/s Rd	**Date of Sampling**	13.01.2021
		Date of Testing	14-01-2021

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	653	86	520	82
16.0	12.5	1152	114	1005	117
12.5	10.0	747	60	720	56
10.0	6.3	625	60	559	41
Total		**3177**	**320**	**2804**	**296**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.07
Elongation Index(%):	10.56
Combined FI+EL (%)	20.63

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	14-01-2021
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	Ashwathnagar c/s road	**Date of Sampling:**	13.01.2021
		Date of testing:	14-01-2021
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	356	356	3.56	96.44	95-100
22.4	2485	2841	28.41	71.59	60-80
11.2	2587	5428	54.28	45.72	40-60
4.75	1457.0	6885	68.85	31.15	25-40
2.36	885.0	7770	77.70	22.30	15-30
0.6	821.0	8591	85.91	14.09	8.0-22.0
0.075	941.0	9532	95.32	4.68	0-8
Pan	616.0	10148			
Total	10148.0				

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Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
Project	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Client	BRUHAT BANGALORE MAHANAGARA PALIKE	
Consultant	M/s Tejus Consultants	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Date of Testing	15-01-2021	
Layer no. or level	WMM I layer	
Depth of hole	230mm	
Field density:	**1**	**2**
Chainage	**Ashwathnagar Cross road (Flag Pole)'@Ch:95**	**Sri Matha Kutira House Road'@Ch:26**
Wt. of wet material from hole (Ww) gms.	5981	6133
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9854	9718
Wt. of sand in cone (w3) gms.	826	841
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3320	3441
Bulk density of sand (ys)gm/cc	1.31	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.36	2.35
Moisture meter reading(moisture content)	12.45	12.56
Result		
FDD(Wt.of the dry material)=(100yb/100+mc)gm/cc	2.10	2.09
MDD	2.13	2.13
OMC	12.60%	12.60%
% of Compaction Obtained	98.53	98.13
Compaction Required	98%	98%

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು-24

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Project	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**15-01-2021**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Chainage	**Hunase marada Appayanna 4th cross Chikkanna Badavane'@Ch:85**	**Hunase marada Appayanna 4th cross Chikkanna Badavane'@Ch:176**
Wt. of wet material from hole (Ww) gms.	5980	5985
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10595	10598
Wt. of sand in hole+ cone (w3) gms.	4405	4402
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3325	3322
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.38
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.24
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.29	98.65
% compaction required	98%	98%

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	Tejus Consultants, Bangalore		
Contractor	M/S Benaka Developers and Projects Pvt Ltd		
Proposed Use	BC	**Date of Sampling**	05-07-2021
Sample Location	At plant	**Date of Testing**	05-07-2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	376.00	365.00	359.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	285.00	275.00	271.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	91.00	90.00	88.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.20	24.66	24.51	
5	Average Aggregate impact value	(%)	24.46			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor:	M/S Benaka Developers and Projects Pvt Ltd

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	05-07-2021
		Date of Testing	05-07-2021

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	814	75	927	70
16.0	12.5	1345	130	1236	115
12.5	10.0	518	65	440	54
10.0	6.3	455	55	430	65
Total		**3132**	**325**	**3033**	**304**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.38
Elongation Index(%):	10.02
Combined FI+EL (%)	20.40

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಧಿಯಂತರರು
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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	08.07.2021
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	889	917
2. Weight of Mixture after extraction, g	842	869
3. Weight of Bitumen	47	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	48.60	50.00
8. Bitumen content in %	5.47	5.45
9. Average Bitumen content in %	5.46	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Ashwathnagar Cross road (Flag Pole)	Date of Sampling:	08.07.2021
Type of material & Purpose:	BC	Date of testing:	08.07.2021
		Oven Dry Wt.(gms):	842.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	79	79.0	9.38	90.62	79 - 100
9.50	105	184.0	21.85	78.15	71 - 95
4.75	122	306.0	36.34	63.66	53 - 71
2.360	106	412.0	48.93	51.07	42 - 58
1.180	98	510.0	60.57	39.43	34 - 48
0.600	80	590.0	70.07	29.93	26 - 38
0.300	75	665.0	78.98	21.02	18 - 28
0.150	62	727.0	86.34	13.66	12 - 20
0.075	68	795.0	94.42	5.58	4 - 10
Pan	47.0				
Total	842.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	08-07-2021
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	949	961
2. Weight of Mixture after extraction, g	899	911
3. Weight of Bitumen	50	50
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	52.00
8. Bitumen content in %	5.44	5.41
9. Average Bitumen content in %	**5.42**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Hunase marada Appayanna 4th cross Chikkanna Badavane	Date of Sampling:	08-07-2021
Type of material & Purpose:	**BC**	Date of testing:	08-07-2021
		Oven Dry Wt.(gms):	899.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	81	81.0	9.01	90.99	79 - 100
9.50	112	193.0	21.47	78.53	71 - 95
4.75	133	326.0	36.26	63.74	53 - 71
2.360	110	436.0	48.50	51.50	42 - 58
1.180	105	541.0	60.18	39.82	34 - 48
0.600	73	614.0	68.30	31.70	26 - 38
0.300	81	695.0	77.31	22.69	18 - 28
0.150	62	757.0	84.20	15.80	12 - 20
0.075	70	827.0	91.99	8.01	4 - 10
Pan	72.0				
Total	899.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	08.07.2021
Type of Mix :	Tack coat
Sample I/D :	1
Location	Ashwathnagar Cross road (Flag Pole)

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@28**	**@76**	**@102**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.788	0.772	0.791
Final weight of plate after application of tack Coat (c)	Kg	0.811	0.795	0.814
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Road and Drains at Ashwath nagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	08.07.2021
Type of Mix :	Tack coat
Sample I/D :	2
Location	Hunase marada Appayanna 4th cross Chikkanna Badavane

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@75**	**@169**	**@264**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.802	0.764	0.815
Final weight of plate after application of tack Coat (c)	Kg	0.825	0.787	0.838
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BRUHAT BANGALORE MAHANAGARA PALIKE

BYATARAYANPURA DIVISION

Name of Work: Package 3, includes 3 works of 100.00 Lakhs

2. Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.

FIRST & PART BILL

TEST REPORTS

TEJUS CONSULTANTS

CONSULTING ENGINEERS AND DESIGNERS

No.58 MIG, 6th Cross, 3rd Main

1st Stage, Basaveshwaranagar

Bangalore-560079

☎ 080 - 23287532

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike		
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Consultants	TEJUS CONSULTANTS		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Total Weight:	10000	gms	

SIEVE ANALYSIS

Type of Material	**12.5 mm down size**	**Proposed Use**	CONCRETE
Sample Location	2nd Main Rd, 2nd Phase, Sri Balaji Krupa Layout	**Date of Sampling**	09.01.2021
		Date of Testing	10.01.2021

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	506	506	5.06	94.94	90-100
10.0	4596	5102	51.02	48.98	40-85
4.75	4432	9534	95.34	4.66	0-10
Pan	466	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike		
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Total Weight:	10000	gms	

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	2nd Main Rd, 2nd Phase, Sri Balaji Krupa Layout	**Date of Sampling**	09.01.2021
		Date of Testing	10.01.2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	268	268	2.68	97.32	95 - 100
10.00 mm	4838	5106	51.06	48.94	25 - 55
4.75 mm	4222	9328	93.28	6.72	0 - 10
Pan	672	10000			

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.66(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	concrete
Location/Source	2nd Main Rd, 2nd Phase, Sri Balaji Krupa Lay	Date of Sampling	09.01.2021
Period of Soaking	24 hours	Date of Testing	10.01.2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	648	650	658	
B	Weight of oven - dry sample gm.	640	642	648	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1682	1683	1690	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.656	2.653	2.667	2.658
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.250	1.246	1.543	1.346

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Test Report on Cement

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	10.01.2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	98 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	384 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	29.00%	25 % to 35

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Name of Work	:	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
No.of Sample Tested	:	3
Date of Testing	:	12-01-2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M20 . 250mm Thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (KN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	100.00	180.00	3.542	2505.45	1.80	0.960	163.00	20.75	22.41	21.52	26.90
2	100.00	180.00	3.538	2502.62	1.80	0.960	161.00	20.50	22.14	21.25	26.57
3	100.00	180.00	3.531	2497.67	1.80	0.960	162.00	20.63	22.28	21.39	26.73

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Consultant's Representative

TEJUS CONSULTANTS ... KHB Colony, Basaveshwaranagar, Bangalore - 560079. O : +91 80 23287532, tejusconsultants@gmail.com

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	**M sand**	**Proposed Use**	concrete
Sample Location	2nd Main Rd, 2nd Phase, Sri Balaji Krupa Layout	**Date of Sampling**	10-01-2021
		Date of Testing	10-01-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	225	225	7.50	92.50	90 - 100
2.36 mm	312	537	17.90	82.10	75 - 100
1.18 mm	422	959	31.97	68.03	55 - 90
0.600 mm	492	1451	48.37	51.63	35 -59
0.300 mm	714	2165	72.17	27.83	8-30
0.150 mm	646	2811	93.70	6.30	0 - 10
Pan	189	3000			-

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION
FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	PCC
Location/Source	Fathima Layout road	Date of Sampling	19-01-2021
Period of Soaking	24 hours	Date of Testing	20-01-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	644	659	632	
B	Weight of oven - dry sample gm.	636	650	623	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1680	1689	1672	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.661	2.653	2.651	2.655
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.258	1.385	1.445	1.362

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Test Report on Cement

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	20.01.2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	106 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	542 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	5 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	25 % to 35

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TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	Fathima layout road	**Date of Sampling**	19-01-2021
		Date of Testing	20-01-2021

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	82	82	2.73	97.27	95-100
20.00mm	1389	1471	49.03	50.97	30-70
10.00mm	975	2446	81.53	18.47	10-35
4.75mm	436	2882	96.07	3.93	0-5
Pan	118	3000	100.00	0.00	

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	3000 gms				
Type of Material	M sand		Proposed Use	PCC	
Sample Location	Fathima Layout road		Date of Sampling	20-01-2021	
			Date of Testing	20-01-2021	
IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	221	221	7.37	92.63	90 - 100
2.36 mm	318	539	17.97	82.03	75 - 100
1.18 mm	436	975	32.50	67.50	55 - 90
0.600 mm	470	1445	48.17	51.83	35 -59
0.300 mm	748	2193	73.10	26.90	8-30
0.150 mm	650	2843	94.77	5.23	0 - 10
Pan	157	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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Test Report on Cement

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	23-01-2021
Sample Supplied By	Agency

a				
Sl.No.	**Descriptions**	**Test Method as per IS**	**Test Result**	**Requirements as per IS: 12269-1987**
1	a) Initial Setting Time	IS-4031 (Part-5)	107 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	416 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	

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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION
FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	**Proposed Use**	concrete
Location/Source	At Plant	**Date of Sampling**	22-01-2021
Period of Soaking	24 hours	**Date of Testing**	23-01-2021

Sl. No.	Test Property		TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.		644	663	665	
B	Weight of oven - dry sample gm.		635	654	656	
C	Weight of Pycnometer Filled with water gm		1275	1275	1275	
D	Weight of Pycnometer + sample + water gm		1680	1692	1694	
E	Bulk specific gravity	$\frac{B}{(C+A-D)}$	2.657	2.659	2.667	**2.661**
G	Absorption (%)	$\frac{(A-B)*100}{B}$	1.417	1.376	1.372	**1.388**

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms			
Type of Material	**M sand**	**Proposed Use**	concrete	
Sample Location	At Plant	**Date of Sampling**	23-01-2021	
		Date of Testing	23-01-2021	

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	210	210	7.00	93.00	90 - 100
2.36 mm	318	528	17.60	82.40	75 - 100
1.18 mm	422	950	31.67	68.33	55 - 90
0.600 mm	462	1412	47.07	52.93	35 -59
0.300 mm	782	2194	73.13	26.87	8-30
0.150 mm	611	2805	93.50	6.50	0 - 10
Pan	195	3000			-

Remarks : Satisfactory / Not Satisfactory

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TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Name of Work	:	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	:	Bruhat Bengaluru Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Date of Testing	:	27-01-2021
Techinical Reference	:	IS 1786:2008, IS1608:2005, IS1599:1985(Reaffirmed2006)
Sample Identification	:	8mm, 10mm.TMT Fe500 Bars

Sl. No.	**Nominal size dia in mm)**	**Mass per metre (kg/m)**	**TENSILE STRENGTH**		
			0.20% proof stress/yield stress N/mm2	**Tensile strength N/mm2 '**	**Elongation,percent on gauge length**
1	8	0.397	516	564	17
2	10	0.618	532	577	18

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Consultant's Representative

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Asadullah khan house road

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	27-01-2021	03-02-2021	7 days	8.125	22500	445	19.78	19.87
2	27-01-2021	03-02-2021	7 days	8.166	22500	449	19.96	
3	27-01-2021	03-02-2021	7 days	8.157	22500	447	19.87	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Asadullah khan house road

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	27-01-2021	24-02-2021	28 days	8.145	22500	698	31.02	31.19
2	15.02.2021	24-02-2021	28 days	8.164	22500	702	31.20	
3	15.02.2021	24-02-2021	28 days	8.159	22500	705	31.33	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	MS Nandini Milk Opposite Road

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	27-01-2021	03-02-2021	7 days	8.136	22500	443	19.69	19.90
2	27-01-2021	03-02-2021	7 days	8.154	22500	449	19.96	
3	27-01-2021	03-02-2021	7 days	8.164	22500	451	20.04	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	MS Nandini Milk Opposite Road

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	27-01-2021	24-02-2021	28 days	8.136	22500	699	31.07	31.05
2	27-01-2021	24-02-2021	28 days	8.159	22500	702	31.20	
3	27-01-2021	24-02-2021	28 days	8.167	22500	695	30.89	

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Test Report on Cement

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra) Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	10.02.2021
Sample Supplied By	Agency

a				
Sl.No.	**Descriptions**	**Test Method as per IS**	**Test Result**	**Requirements as per IS: 12269-1987**
1	a) Initial Setting Time	IS-4031 (Part-5)	107 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	416 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	

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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	concrete
Location/Source	At Plant	Date of Sampling	09.02.2021
Period of Soaking	24 hours	Date of Testing	10.02.2021

Sl. No.	Test Property		TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.		644	663	665	
B	Weight of oven - dry sample gm.		635	654	656	
C	Weight of Pycnometer Filled with water gm		1275	1275	1275	
D	Weight of Pycnometer + sample + water gm		1680	1692	1694	
E	Bulk specific gravity	B / (C + A - D)	2.657	2.659	2.667	2.661
G	Absorption (%)	(A - B) *100 / B	1.417	1.376	1.372	1.388

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	Proposed Use	concrete
Sample Location	At Plant	Date of Sampling	10-02-2021
		Date of Testing	10-02-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	210	210	7.00	93.00	90 - 100
2.36 mm	318	528	17.60	82.40	75 - 100
1.18 mm	422	950	31.67	68.33	55 - 90
0.600 mm	462	1412	47.07	52.93	35 -59
0.300 mm	782	2194	73.13	26.87	8-30
0.150 mm	611	2805	93.50	6.50	0 - 10
Pan	195	3000			-

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Total Weight:	10000 gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	At Plant	**Date of Sampling**	09.02.2021
		Date of Testing	10.02.2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	262	262	2.62	97.38	95 - 100
10.00 mm	4829	5091	50.91	49.09	25 - 55
4.75 mm	4232	9323	93.23	6.77	0 - 10
Pan	677	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT		
Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Consultants	TEJUS CONSULTANTS	
Contractor	M/S Benaka Developers and Projects Pvt.Ltd	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	12.5 mm down size	Proposed Use	CONCRETE
Sample Location	At Plant	Date of Sampling	09.02.2021
		Date of Testing	10.02.2021

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	569	569	5.69	94.31	90-100
10.0	3360	3929	39.29	60.71	40-85
4.75	5429	9358	93.58	6.42	0-10
Pan	642	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:56(LHS) Fathima Layout Rd(For Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	15-02-2021	22-02-2021	7 days	8.122	22500	305	13.56	13.72
2	15-02-2021	22-02-2021	7 days	8.157	22500	310	13.78	
3	15-02-2021	22-02-2021	7 days	8.147	22500	311	13.82	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:56(LHS) Fathima Layout Rd(For Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	15-02-2021	15-03-2021	28 days	8.145	22500	480	21.33	21.10
2	15.02.2021	15-03-2021	28 days	8.164	22500	469	20.84	
3	15.02.2021	15-03-2021	28 days	8.159	22500	475	21.11	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:98(LHS) Fathima Layout Rd(For Side Walls)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	17-02-2021	24-02-2021	7 days	8.125	22500	309	13.73	13.85
2	17-02-2021	24-02-2021	7 days	8.154	22500	312	13.87	
3	17-02-2021	24-02-2021	7 days	8.164	22500	314	13.96	

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TEJUS CONSULTANTS

Authorised Signatory

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:98(LHS) Fathima Layout Rd(For Side Walls)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	17-02-2021	17-03-2021	28 days	8.166	22500	485	21.56	21.78
2	17-02-2021	17-03-2021	28 days	8.175	22500	490	21.78	
3	17-02-2021	17-03-2021	28 days	8.188	22500	495	22.00	

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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PRECAST SLAB (CORE) TEST REPORT

ient	:	Bruhat Bangalore Mahanagara Palike
ntractor	:	Benaka Developers & Project Pvt.Ltd.
ame of Work	:	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
o.of Sample Tested	:	3
ate of Testing	:	20.03.2021
echinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
rade of Concrete	:	M20. 100mm thick

No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	90.00	0.425	2405.01	1.80	0.960	39.36	20.05	21.65	20.78	25.98
2	50.00	90.00	0.460	2603.07	1.80	0.960	39.40	20.07	21.67	20.80	26.01
3	50.00	90.00	0.452	2557.80	1.80	0.960	39.52	20.13	21.74	20.87	26.09

ote:

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Consultant's Representative

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Name of Work	:	Improvements to Road and Drains at Fathima Layout cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
No.of Sample Tested	:	3
Date of Testing	:	22.03.2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M20 . 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	90.00	0.469	2654.00	1.80	0.960	39.54	20.14	21.75	20.88	26.10
2	50.00	90.00	0.454	2569.11	1.80	0.960	39.48	20.11	21.72	20.85	26.06
3	50.00	90.00	0.460	2603.07	1.80	0.960	39.42	20.08	21.68	20.82	26.02

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BRUHAT BANGALORE MAHANAGARA PALIKE

BYATARAYANPURA DIVISION

Name of Work: Package 3, includes 3 works of 100.00 Lakhs

3. Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.

FIRST & PART BILL

TEST REPORTS

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
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Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

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Test Report on Cement

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	24.01.2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	98 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	489 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	30.00%	25 % to 35

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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION
FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	PCC
Location/Source	Sri Sai Balaji Builders beside road	Date of Sampling	23-01-2021
Period of Soaking	24 hours	Date of Testing	24-01-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	645	660	632	
B	Weight of oven - dry sample gm.	637	652	623	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1680	1689	1672	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.654	2.650	2.651	2.652
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.256	1.227	1.445	1.309

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	Proposed Use	PCC
Sample Location	Sri Sai Balaji Builders beside road	Date of Sampling	24-01-2021
		Date of Testing	24-01-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	221	221	7.37	92.63	90 - 100
2.36 mm	318	539	17.97	82.03	75 - 100
1.18 mm	436	975	32.50	67.50	55 - 90
0.600 mm	470	1445	48.17	51.83	35 -59
0.300 mm	748	2193	73.10	26.90	8-30
0.150 mm	650	2843	94.77	5.23	0 - 10
Pan	157	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	Sri Sai Balaji Builders beside road	**Date of Sampling**	23-01-2021
		Date of Testing	24-01-2021

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	85	85	2.83	97.17	95-100
20.00mm	1402	1487	49.57	50.43	30-70
10.00mm	966	2453	81.77	18.23	10-35
4.75mm	436	2889	96.30	3.70	0-5
Pan	111	3000	100.00	0.00	

Remarks : Satisfactory / Not Satisfactory

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Test Report on Cement

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Road Name	sri sai balaji beside road
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	27-01-2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	101 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	488 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	7mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	27.00%	

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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	**Proposed Use**	concrete
Location/Source	At Plant	**Date of Sampling**	26-01-2021
Period of Soaking	24 hours	**Date of Testing**	27-01-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	658	647	660	
B	Weight of oven - dry sample gm.	649	639	652	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1689	1682	1689	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.660	2.663	2.650	2.658
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.387	1.252	1.227	1.289

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt.Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	**Proposed Use**	concrete
Sample Location	At Plant	**Date of Sampling**	27-01-2021
		Date of Testing	27-01-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	207	207	6.90	93.10	90 - 100
2.36 mm	290	497	16.57	83.43	75 - 100
1.18 mm	411	908	30.27	69.73	55 - 90
0.600 mm	489	1397	46.57	53.43	35 -59
0.300 mm	820	2217	73.90	26.10	8-30
0.150 mm	628	2845	94.83	5.17	0 - 10
Pan	155	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT					
Clients	Bruhat Bangalore Mahanagara Palike				
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division				
Consultants	TEJUS CONSULTANTS				
Contractor	M/S Benaka Developers and Projects Pvt.Ltd				
Total Weight:	10000	gms			
SIEVE ANALYSIS					
Type of Material	20 mm down size		**Proposed Use**	Concrete	
Sample Location	At Plant		**Date of Sampling**	26-01-2021	
			Date of Testing	27-01-2021	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
40.00 mm	0	0	0	100	**100**
20.00 mm	277	277	2.77	97.23	**95 - 100**
10.00 mm	4820	5097	50.97	49.03	**25 - 55**
4.75 mm	4215	9312	93.12	6.88	**0 - 10**
Pan	688	10000			
Remarks :	✓ Satisfactory / Not Satisfactory				

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TEST REPORT						
Clients	Bruhat Bangalore Mahanagara Palike					
Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division					
Consultants	TEJUS CONSULTANTS					
Contractor	M/S Benaka Developers and Projects Pvt.Ltd					
Total Weight:	10000	gms				
SIEVE ANALYSIS						
Type of Material	**12.5 mm down size**		**Proposed Use**	CONCRETE		
Sample Location	At Plant		**Date of Sampling**	26-01-2021		
			Date of Testing	27-01-2021		
IS Sieve Size (in mm)	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**	
20.0	0	0	0	100	100	
12.5	522	522	5.22	94.78	90-100	
10.0	3275	3797	37.97	62.03	40-85	
4.75	5420	9217	92.17	7.83	0-10	
Pan	783	10000				
Remarks :	✓ Satisfactory / Not Satisfactory					

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TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Name of Work	:	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	:	Bruhat Bengaluru Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Date of Testing	:	30-01-2021
Techinical Reference	:	IS 1786:2008, IS1608:2005, IS1599:1985(Reaffirmed2006)
Sample Identification	:	8mm, 10mm.TMT Fe500 Bars

Sl. No.	Nominal size dia in mm)	Mass per metre (kg/m)	TENSILE STRENGTH		
			0.20% proof stress/yield stress N/mm2	Tensile strength N/mm2 '	Elongation,percent on gauge length
1	8	0.398	519	569	17
2	10	0.618	536	589	18

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	M/S Benaka Developers and Projects Pvt.Ltd
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:61 (LHS) Sri Sai Balaji Builders beside road (For Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	02-02-2021	09-02-2021	7 days	8.136	22500	309	13.73	13.79
2	02-02-2021	09-02-2021	7 days	8.156	22500	314	13.96	
3	02-02-2021	09-02-2021	7 days	8.187	22500	308	13.69	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	M/S Benaka Developers and Projects Pvt.Ltd
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:61 (LHS) Sri Sai Balaji Builders beside road (For Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	02-02-2021	09-02-2021	28days	8.135	22500	489	21.73	21.63
2	02-02-2021	09-02-2021	28days	8.159	22500	486	21.60	
3	02-02-2021	09-02-2021	28days	8.175	22500	485	21.56	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	M/S Benaka Developers and Projects Pvt.Ltd
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:42 (LHS) Sri Sai Balaji Builders beside road (For Side Walls)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	04-02-2021	11-02-2021	7 days	8.136	22500	309	13.73	13.79
2	04-02-2021	11-02-2021	7 days	8.156	22500	314	13.96	
3	04-02-2021	11-02-2021	7 days	8.187	22500	308	13.69	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	M/S Benaka Developers and Projects Pvt.Ltd
Contractor	Benaka Developers & Project Pvt.Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample location	Ch:42 (LHS) Sri Sai Balaji Builders beside road (For Side Walls)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	04-02-2021	04-03-2021	28days	8.136	22500	490	21.78	21.90
2	04-02-2021	04-03-2021	28days	8.158	22500	493	21.91	
3	04-02-2021	04-03-2021	28days	8.164	22500	495	22.00	

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	Bruhat Bengaluru Mahanagara Palike		
Consultant	TEJUS CONSULTANTS,		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	WMM	**Date of Sampling**	21.06.2021
Sample Locati	Tuba layout	**Date of Testing**	22.06.2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	363.00	369.00	350.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	269.00	270.00	255.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	94.00	99.00	95.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.90	26.83	27.14	
5	Average Aggregate impact value	(%)	26.62			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.106 Thanisandra, Byatarayanapura Sub Division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Type of Material	WMM		**Proposed Use**	**WMM**
Sample Location	Tuba layout		**Date of Sampling**	**21.06.2021**
			Date of Testing	**22.06.2021**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	651	86	520	82
16.0	12.5	1152	114	1005	117
12.5	10.0	747	62	721	55
10.0	6.3	625	60	559	41
Total		**3175**	**322**	**2805**	**295**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.14
Elongation Index(%):	10.52
Combined FI+EL (%)	20.66

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	Tuba Layout	**Date of Sampling:**	21.06.2021
		Date of testing:	22.06.2021
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	359	359	3.59	96.41	95-100
22.4	2485	2844	28.44	71.56	60-80
11.2	2587	5431	54.31	45.69	40-60
4.75	1457.0	6888	68.88	31.12	25-40
2.36	885.0	7773	77.73	22.27	15-30
0.6	821.0	8594	85.94	14.06	8.0-22.0
0.075	941.0	9535	95.35	4.65	0-8
Pan	616.0	10151			
Total	10151.0				

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Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**24-06-2021**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Chainage	**Tuba layout '@Ch74**	**masjidi road'@Ch:46**
Wt. of wet material from hole (Ww) gms.	5982	5981
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10595	10598
Wt. of sand in hole+ cone (w3) gms.	4405	4402
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3325	3322
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.38
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.24
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.32	98.58
% compaction required	98%	98%

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	Tejus Consultants, Bangalore		
Contractor	M/S Benaka Developers and Projects Pvt Ltd		
Proposed Use	BC	Date of Sampling	01.07.2021
Sample Location	At plant	Date of Testing	01.07.2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	376.00	365.00	359.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	285.00	275.00	265.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	91.00	90.00	94.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.20	24.66	26.18	
5	Average Aggregate impact value	(%)	25.01			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor:	M/S Benaka Developers and Projects Pvt Ltd

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	01.07.2021
		Date of Testing	01.07.2021

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	814	75	923	71
16.0	12.5	1345	130	1236	115
12.5	10.0	518	65	440	54
10.0	6.3	455	55	430	65
Total		**3132**	**325**	**3029**	**305**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.38
Elongation Index(%):	10.07
Combined FI+EL (%)	20.45

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	03-07-2021
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	946	893
2. Weight of Mixture after extraction, g	896	846
3. Weight of Bitumen	50	47
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	49.00
8. Bitumen content in %	5.45	5.49
9. Average Bitumen content in %	5.47	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	Tuba Layout	Date of Sampling:	03-07-2021
Type of material & Purpose:	BC	Date of testing:	03-07-2021
		Oven Dry Wt.(gms):	896.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	82	82.0	9.15	90.85	79 - 100
9.50	125	207.0	23.10	76.90	71 - 95
4.75	133	340.0	37.95	62.05	53 - 71
2.360	115	455.0	50.78	49.22	42 - 58
1.180	102	557.0	62.17	37.83	34 - 48
0.600	75	632.0	70.54	29.46	26 - 38
0.300	82	714.0	79.69	20.31	18 - 28
0.150	60	774.0	86.38	13.62	12 - 20
0.075	73	847.0	94.53	5.47	4 - 10
Pan	49.0				
Total	896.0				

Note:

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3. Any Query regarding the report must be reported reported within 15days from the date of testing.
4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	03-07-2021
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	965	921
2. Weight of Mixture after extraction, g	914	873
3. Weight of Bitumen	51	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	50.00
8. Bitumen content in %	5.45	5.43
9. Average Bitumen content in %	**5.44**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	masjidi road	Date of Sampling:	03-07-2021
Type of material & Purpose:	BC	Date of testing:	03-07-2021
		Oven Dry Wt.(gms):	914.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	79	79.0	8.64	91.36	79 - 100
9.50	108	187.0	20.46	79.54	71 - 95
4.75	136	323.0	35.34	64.66	53 - 71
2.360	120	443.0	48.47	51.53	42 - 58
1.180	106	549.0	60.07	39.93	34 - 48
0.600	78	627.0	68.60	31.40	26 - 38
0.300	83	710.0	77.68	22.32	18 - 28
0.150	68	778.0	85.12	14.88	12 - 20
0.075	72	850.0	93.00	7.00	4 - 10
Pan	64.0				
Total	914.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	03.07.2021
Type of Mix :	Tack coat
Sample I/D :	1
Location	Vidyasagar tuba layout road

Determination	Unit	Test No		
		1	2	3
Location	Chainage	@32	@69	@100
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.783	0.794	0.763
Final weight of plate after application of tack Coat (c)	Kg	0.806	0.817	0.786
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Road and Drains at Saraipalya Vidyasagar cross roads in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	03.07.2021
Type of Mix :	Tack coat
Sample I/D :	2
Location	masjidi road

Determination	Unit	Test No		
		1	2	3
Location	**Chainage**	**@29**	**@68**	**@87**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.781	0.772	0.796
Final weight of plate after application of tack Coat (c)	Kg	0.804	0.795	0.819
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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